

Q.1	Two cards are randomly drawn, one after the other, from a standard deck of 52 cards. The probability of both cards being kings is.				
	$(a)\frac{2}{13}$	$(b)\frac{1}{169}$	$(c)\frac{1}{221}$	$(d) \frac{30}{221}$	
Q.2	A coin is flipped, and a d	ie is rolled. The probabilit	zy of the coin showing hea	ds and the die showing	
	a 6 is.				
	(a) $\frac{1}{8}$	(b) $\frac{1}{12}$	(c) $\frac{1}{2}$	(d) 1	
Q.3	Six dice are rolled concu	rrently. The probability t	hat each die displays a dif	ferent face is.	
	(a) $\frac{1}{6^5}$	$(b)\frac{6!}{6^6}$	$(c)\frac{1}{6!}$	$(d) \frac{5!}{6^6}$	
Q.4	Three numbers are selec	ted from the range 1 to 30). The probability that they	v are not consecutive is.	
	$(a)\frac{142}{145}$	(b) $\frac{144}{145}$	$(c)\frac{143}{145}$	$(d)\frac{1}{145}$	
Q.5	From a group comprisin probability that both of	g 12 girls and 18 boys, tw them are girls.	o students are selected ra	ndomly. Determine the	
	$(a)\frac{22}{145}$	$(b)\frac{13}{15}$	$(c)\frac{1}{18}$	(d) $\frac{1}{15}$	
Q.6	The probability that, am	ong 10 individuals all bor	n in June, at least two sha	re the same birthday is.	
	$(a) \frac{{}^{30}C_{10}}{(20)^{10}}$	(b) $\frac{{}^{30}C_{10}}{201}$	(c) $\frac{30^{10} - {}^{30}P_{10}}{(20)^{10}}$	$(d) \frac{30^{10} + {}^{30}C_{10}}{(20)^{10}}$	
Q.7	The probability that, wh	nen 12 balls are distribut	ed among three boxes, th	e first box will contain	
-	three balls is.				
	(a) $\frac{2^9}{3^{12}}$	(b) $\frac{{}^{12}C_3 \times 2^9}{3^{12}}$	(c) $\frac{{}^{12}C_3 \times 2^{12}}{3^{12}}$	$(d) \frac{{}^{12}C_3}{{}^{12^3}}$	
Q.8	A committee of five indi	viduals is to be selected fr	om a pool of 9 people. Det	termine the probability	
	that a specific married c	ouple will either both ser	ve together or not serve a	t all.	
	(a) $\frac{1}{2}$	(b) $\frac{5}{9}$	(c) $\frac{4}{9}$	$(d)\frac{2}{9}$	
Q.9	Seven white balls and th that no two black balls a	ree black balls are arrang re adjacent.	ed randomly in a row. Det	cermine the probability	
	(a) $\frac{1}{2}$	(b) $\frac{7}{15}$	$(c)\frac{2}{15}$	$(d)\frac{1}{3}$	
Q.10	Out of 15 players, 8 ar	e designated as batsmen	and 7 as bowlers. Calcu	late the probability of	
	selecting a team consist	ing of 6 batsmen and 5 bo	wlers.		
	(a) $\frac{{}^{3}C_{6} \times {}^{7}C_{5}}{{}^{15}C_{11}}$	(b) $\frac{{}^{6}C_{6} + {}^{7}C_{5}}{{}^{15}C_{11}}$	$(c)\frac{15}{28}$	$(d)\frac{14}{29}$	
Q.11	In a peck of cards with	4 aces, 4 kings, 4 queen	s, and 4 jacks, two cards	s are drawn randomly.	
	Determine the probabili	ty that at least one of the	se cards is an ace.		
	(a) $\frac{9}{20}$	(b) $\frac{3}{16}$	$(c)\frac{1}{6}$	(d) $\frac{1}{9}$	
Q.12	.If A and B are two event	ts such that $P(A) = 0.4 P$	(A + B) = 0.7 and P (AB)	= 0.2 then P (B) =	
	(a) 0.1	(b) 0.3	(c) 0.5	(d) 1	
Q.13	A draws two cards, one a	after another with replace	ment, from a deck of 52 ca	rds, and B rolls a pair of	
	unce. what is the probability $\binom{1}{2}$	(h) ¹	rus of the same suit, and B	$\frac{1}{7}$	
	(a) $\frac{144}{144}$	$(0) - \frac{1}{4}$	$(C) \frac{1}{144}$	$(u) \frac{1}{144}$	

Q.14	Two dice are rolled simultaneously. Determine the probability that at least one die will display the				
	$\begin{array}{c} \text{ulgit 6.} \\ \text{(-)} \\ \begin{array}{c} 11 \end{array} \end{array}$	$(1)^{1}$	(-) 5	$(\mathbf{J})^{1}$	
	$(a) {36}$	$(D)\frac{1}{3}$	$(c) \frac{1}{11}$	$(u) - \frac{1}{6}$	
Q.15	In a dice throw, the prot	bability of getting a one or	the eleventh throw is.	an 1	
	(a) $\frac{1}{36}$	(b) $\frac{1}{11}$	(c) $\frac{1}{11}$	$(d) = \frac{1}{6}$	
Q.16	The likelihood that A te	lls the truth is. $\frac{4}{5}$ while th	e likelihood of this for B	is. $\frac{3}{4}$ The probability of	
	them providing conflicti	ng statements when aske	d to speak about a fact.		
	$(a)\frac{4}{5}$	(b) $\frac{1}{5}$	$(c)\frac{7}{20}$	$(d)\frac{3}{20}$	
Q.17	Two dice are thrown sin	nultaneously, and three ev	vents A, B, and C are defin	ed as follows:	
	A: The sum of the number	ers is 10			
	B: The sum of the number	ers is 9			
	C: The sum of the number	ers is 8			
	If P (E) is the probability	v of event E, then which of	f the following statements	is true?	
	(a) $P(A) = \frac{1}{11}$	(b) $P(B) = \frac{1}{8}$	(c) $P(C) = \frac{3}{36}$	(d) $P(C) = \frac{1}{9}$	
Q.18	When a coin is tossed fo	ur times, determine the p	robability of obtaining at 1	least one head.	
	(a) $\frac{1}{16}$	(b) $\frac{15}{16}$	(c) $\frac{13}{16}$	$(d)\frac{11}{16}$	
Q.19	When two dice are thro	wn simultaneously, and t	he sum of the numbers is	noted, if the sum is 7,	
	then the probability is.				
	$(a)\frac{1}{5}$	(b) $\frac{1}{4}$	$(c)\frac{1}{6}$	(d) $\frac{1}{7}$	
Q.20	A single card is drawn fr drawn card is either red	om a standard deck of 52 or a King	playing cards. Determine t	he probability that the	
	$(a)\frac{7}{2}$	(h) $\frac{29}{2}$	$(c)^{\frac{25}{2}}$	(d) $\frac{23}{23}$	
0.21	(a) 13 A four-digit number is cl	⁽⁵⁾ ₅₂ Josen If the probability th	^(C) 52 1 the number has non-re	^(a) 52	
Q.21	the value of 125P is.	iosen. If the probability th			
	(a) 63	(b) 64	(c) 65	(d) 66	
Q.22	If $P(A) = \frac{1}{2}$ and $P(A \cap B)$	$=\frac{1}{3}$ the probability of ev	ent A occurring while eve	nt B does not occur is.	
	$(a)\frac{1}{2}$	(b) $\frac{1}{3}$	$(c)\frac{5}{6}$	$(d)\frac{1}{6}$	
Q.23	A number is chosen from	the first 100 natural num	bers. Determine the proba	ability that the number	
	is either a perfect square	e or a perfect cube.			
	(a) $\frac{7}{50}$	(b) $\frac{3}{25}$	$(c)\frac{2}{25}$	$(d)\frac{1}{25}$	
Q.24	When a die is thrown fo	our times, and the sum of	the numbers is noted, if t	the sum is 23, then the	
	probability is.				
	(a) $\frac{1}{324}$	(b) $\frac{1}{342}$	$(c)\frac{1}{243}$	$(d) \frac{1}{322}$	
Q.25	Three-digit numbers wi	th digit repetition are cre	ated using the digits {1, 2	, 3 9}. Determine the	
	probability that a rando	mly selected number is di	visible by 5.		
	$(a)\frac{2}{9}$	(b) $\frac{3}{9}$	$(c)\frac{1}{9}$	$(d)\frac{1}{8}$	
Q.26	Four-digit numbers are	created by using the dig	its 1, 2, 3, 6 without rep	etition. Determine the	
	(a) $\frac{1}{2}$	(b) $\frac{1}{2}$	$(c)^{\frac{1}{2}}$	(d) 1	
0 27	A hag holds 5 black and	4 white halls Two halls	$\frac{O}{2}$	e probability that both	
Q.27	balls are of the same col	or.	are drawn. Determine the	e probability that both	
	(a) $\frac{4}{9}$	(b) $\frac{8}{9}$	$(c)\frac{2}{9}$	$(d)\frac{1}{9}$	
Q.28	For a positive integer n,	determine the probability	y that the unit place of 3 ⁿ i	s 3.	
	(a) $\frac{1}{4}$	(b) $\frac{1}{r}$	$(c)\frac{3}{10}$	$(d)\frac{1}{2}$	
	- 4	5	10	8	

Q.29	From a deck of 52 cards,	five cards are drawn. Calo	culate the probability that	among these five cards,
	only one is a king.			
	(a) $\frac{{}^{48}C_4}{{}^{52}C_4}$	(b) $\frac{{}^{48}C_4}{{}^{51}C_4}$	(c) $\frac{{}^{48}C_{44}}{{}^{52}C_5} \times 4$	$(d) \frac{{}^{48}C_{44}}{{}^{51}C_4} \times 4$
Q.30	Twelve members of a	committee are to be se	ated randomly around a	table. Determine the
	probability that there a	re 3 members seated betw	veen the two specific mem	ibers A and B.
	(a) $\frac{2}{11}$	(b) $\frac{7}{11}$	(c) $\frac{4}{11}$	(d) $\frac{5}{11}$
0.31	A bag holds 5 brown ar	nd 4 white socks. A man d	draws two socks. Determi	ne the probability that
C	both socks are of the sa	me color.		I J
	(a) $\frac{5}{}$	(b) $\frac{18}{18}$	(c) $\frac{30}{30}$	(d) $\frac{48}{48}$
032	When two halls are dra	$(-)_{108}$	⁽⁹⁾ 108 2 white 4 red and 5 bla	$(-)_{108}$
Q.52	probability that both of	them are red	2 winte, 11eu, and 5 bia	ek balls, determine the
	$(2) \frac{1}{2}$	$(h) \frac{2}{n}$	$(c)^{\frac{4}{4}}$	$(d)^{\frac{6}{6}}$
0.00	$(a) \frac{1}{55}$	$(0)\frac{1}{55}$	$(C) \frac{1}{55}$	$(u) \frac{1}{55}$
Q.33	A and B play a game wi	th two dice, where A win	s if he rolls a 6 before B r	olls a 7. Determine the
	probability of A winning	g.	. 180	. n. 36
	(a) $\frac{33}{61}$	(b) $\frac{10}{122}$	(c) $\frac{100}{1141}$	(d) $\frac{33}{1141}$
Q.34	When n coins are tossed	l, the number of elements	in the sample space is.	
	(a) ${}^{n}C_{0} + {}^{n}C_{1} + {}^{n}C_{2} +$	$\cdots + {}^{n}C_{n}$	(b) ${}^{n}C_{0} + {}^{n}C_{2} + {}^{n}C_{4} +$	
	(c) ${}^{n}C_{1} + {}^{n}C_{3} + {}^{n}C_{5} +$		(d) 2^{n+1}	
Q.35	If three dice are thrown	simultaneously and the pi	robability that the number	's on them are the same
	is P, then the value of 36	oP IS.	(-) 1	
0.26	(a) 3 Three students Dom A	(D) Z li and John narticinata i	(C) I n a compatitiva avaminat	(a) 4 ion. The probability of
Q.30	Pam coming first is three	ii, and join, participate i	n a competitive examinat	first is three times that
	of John Determine the	robability of John coming	tirst	In st is three times that
	(a) $\frac{1}{2}$	(h) ³	(a) ¹²	(d) ⁹
	(a) $\frac{1}{13}$	$(D) \frac{1}{13}$	$(C) \frac{1}{13}$	$(a) \frac{1}{13}$
Q.37	Given two events A and	B, if the odds against A a	re 2:1 and the odds in favo	or of A union B are 3:1,
	then. $()^{1}$ (D(D)) ($)^{3}$	(1) (5) (5) (3)	() 1 $($ D $($ D $)$ $($ 3	$(1)^{1}$ $(2)^{3}$
	$(a)_{\frac{1}{2}} \le P(B) \le \frac{1}{9}$	(b) $\frac{1}{12} \le P(B) \le \frac{1}{4}$	$(C)_{\frac{1}{2}} \leq P(B) \leq \frac{1}{5}$	$(\mathfrak{a})_{\frac{1}{3}} \leq P(B) \leq \frac{1}{4}$
Q.38	A bag holds 3 red and 5	black balls. Two balls are	drawn randomly. If the p	robability that one ball
	is red and the other is b	lack is P, then the value of	t 28P - 15 is.	
	(a) 1	(b) 0	(c) $\frac{1}{2}$	(d) 2
Q.39	Two integers, x and y, a	are selected with replacer	ment from the set {0, 1, 2	,, 10}. Determine the
	probability that the abs	olute difference x - y doe	es not exceed 5.	
	(a) $\frac{5}{11}$	(b) $\frac{81}{121}$	(c) $\frac{3}{11}$	$(d) \frac{91}{121}$
Q.40	A coin is flipped 10 time	es. Determine the probabi	lity of obtaining at most 6	heads.
	(a) $\frac{51}{64}$	(b) $\frac{53}{64}$	(c) $\frac{105}{510}$	$(d)\frac{193}{512}$
0.41	A number is chosen fro	om the set {1. 2. 3 100). Determine the probabi	lity that the number is
v	either even or a multipl	e of 5.	,	,
	(a) $\frac{7}{-}$	(b) $\frac{3}{2}$	(c) $\frac{4}{-}$	$(d)^{\frac{2}{2}}$
0.42	(10) Erom 2 sequence of 20 c	onsecutive numbers two	275 sandomly selected Det	termine the probability
Q.72	that the sum of the chos	en numbers is odd	are randonity selected. De	ter mine the probability
	$(a)^{9}$	(b) 11	$(a)^{10}$	(d) 10
	$(a) \frac{1}{10}$	$(D)\frac{1}{20}$	$(C)\frac{1}{19}$	$(u) \frac{1}{21}$
Q.43	An unbiased coin is flipp	bed. If it lands on heads, a	pair of unbiased dice is ro	lied, and the sum of the
	numbers obtained is n	uted. If it lands on tails,	a card from a well-shuff	ieu pack of nine cards
	numbered 1, 2 , 3 , 9 lS	anuomiy selected, and the	ne number on the card is	s noted. Determine the
	(a) 13 (a) 13	(1) 15 (1) 15	, (a) ¹⁹	(J) ¹⁹
	(a) $\frac{1}{36}$	$(0){72}$	(C) $\frac{1}{36}$	$(a) \frac{1}{72}$

Q.44 Consider the set, S = {1,2, ..., 20}. A subset B of S is termed "nice" if the sum of the elements of B is 203. Determine the probability that a randomly selected subset of S is nice.

(a)
$$\frac{7}{2^{20}}$$
 (b) $\frac{6}{2^{20}}$ (c) $\frac{4}{2^{20}}$ (d) $\frac{5}{2^{20}}$

Q.45 In a random experiment, a fair die is rolled repeatedly until two consecutive fours are obtained. The probability that the experiment will conclude with the fifth throw of the die is equal to.

(a)
$$\frac{150}{6^5}$$
 (b) $\frac{225}{6^5}$ (c) $\frac{175}{6^5}$ (d) $\frac{200}{6^5}$



Define the sample space for the given experiment in the following (1-3):

- **Q.1** (a) A coin undergoes two tosses.
 - (b) Contemplate the experiment where a coin is tossed repeatedly until a head appears.
- **Q.2** A single toss involves two coins, specifically a one-rupee coin and a two-rupee coin.
- **Q.3** Choose two individuals from a group consisting of 3 boys and 2 girls.
- **Q.4** When a coin is tossed, and it shows heads, a ball is drawn from a bag containing 3 blue and 4 white balls. On the other hand, if the coin shows tails, a die is thrown. Illustrate the sample space for this experiment.
- **Q.5** A bag contains one red die, one white die, and one blue die. A die is randomly chosen from the bag and rolled, and the colour along with the number on its top face is noted.
- **Q.6** The experiment involves rolling a die and then tossing a coin once if the die shows an even number. If the die shows an odd number, the coin is tossed twice. Record the sample space for this experiment.
- **Q.7** Determine the sample space for the experiment of rolling a pair of dice (one blue and the other red) once. Additionally, calculate the number of elements in the sample space.
- **Q.8** A box holds 8 cards of identical size, labelled with multiples of 10 ranging from 20 to 90. The cards are shuffled, and one card is randomly chosen. The probability of event A, where the selected card is a multiple of 5, is .
- **Q.9** There is a set of 18 cards, each featuring a distinct shape: 4 cards have a square shape, 6 cards have a circular shape, and the remaining cards have a triangular shape. The probability of choosing a card with a shape that is neither a triangle nor a square is .
- **Q.10** A single coin is tossed. Enumerate its sample space and determine the total number of events.
- **Q.11** Contemplate the experiment of rolling a die. Let A represent the event "obtaining a prime number," and B represent the event "obtaining an odd number." Express the sets that represent these events:

	(a) A or B	(b) A and B	(c) A but not B	(d) not A.				
Q.12	A die is rolled. Explain the following occurrences:							
	(a) A: a number les	ss than 7	(b) B. a multiple of 3	3				
	(c) C: a number no	t less than 4	(d) D: an odd numb	er greater than 2				
	(e) E: an even num	(e) E: an even number greater than 2.						
Q.13	Two children are c	hosen at random from a	group of 2 boys and 3 girls.	Outline the events:				
	(a) A: both selected children are girls							
	(b) B: the selected group consists of one boy and one girl							
	(c) C: at least one boy is selected.							
Q.14	In a solitary roll of two dice, determine:							
	(a) P (odd number on first die and 6 on the second)							
	(b) P (a number >	4 on each die)	(c) P (a total of 11)					
	(d) P (a total of 9 o	r 11)	(e) P (a total of 11 or 12)					
	(f) P (a total of 10	or 12)	(g) P (a total of 9 or 10)					
	(h) P (a total of 10	or 11)	(i) P (a total of 8 or	9)				
	(j) P (a total > 8).							

Q.15 An urn holds 9 red, 7 white, and 4 black balls. If a ball is selected randomly, what is the probability that the drawn ball is: (a) Red (b) White (c) Red or black (d) White or black (e) Not red? **Q.16** Events A, B, and C are events that are mutually exclusive in such a way that $P(A) = \frac{3x+1}{3}$, $P(B) = \frac{1-x}{4}$ and $P(C) = \frac{1-2x}{2}$. Determine the set comprising all potential values of x.

Q.17 If $P(B) = \frac{3}{4}$, $P(A \cap B \cap \overline{C}) = \frac{1}{3}$ and $P(\overline{A} \cap B \cap \overline{C}) = \frac{1}{3}$. Find $P(B \cap C)$

- **Q.18** In a race with five horses, Mr. A randomly chooses two horses to bet on. Calculate the probability that Mr. A selected the winning horse.
- **Q.19** The likelihood of three students solving a question is $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}$ Find the probability of the question being solved, given the respective probabilities.
- **Q.20** If four squares are randomly selected on a chessboard, and the probability that they lie on a diagonal line is P, then the value of 158844P is.

ANSWER KEY - LEVEL - I

Q.	1	2	3	4	5	6	7	8	9	10
Ans.	С	b	b	b	а	С	b	С	b	а
Q.	11	12	13	14	15	16	17	18	19	20
Ans.	а	С	С	а	b	С	С	b	С	а
Q.	21	22	23	24	25	26	27	28	29	30
Ans.	а	d	b	а	С	d	а	а	С	а
Q.	31	32	33	34	35	36	37	38	39	40
Ans.	d	d	b	а	С	а	b	b	d	b
Q.	41	42	43	44	45					
Ans.	b	С	d	d	С					

ANSWER KEY - LEVEL - II

- 1. (a) (HH, HT, TH, TT)
- (b) (H, TH, TTH, TTTH, TTTTH ...
- 2. (HH, HT, TH, TT).
- 3. $\{B_1B_2, B_1B_3, B_1G_1, B_1G_2, B_2B_3, B_2G_1, B_2G_2, B_3G_1, B_3G_2, G_1G_2\}$
- 4. {HB₁, HB₂, HB₃, HW₁, HW₂, HW₃, HW₄, T1, T2, T3, T4, T5, T6
- 5. (R1, R2, R3, R4, R5, R6, WI, W2, W3, W4, W5, W6, B1, B2, B3, B4, B5, B6).
- 6. (IHH, IHT, ITH, ITT, 2H, 2T, 3HH, 3HT, 3TH, 3TT, 4H, 4T, 5HH, 5HT, 5TH, 5TT, 6H, 6T).
- 7. Number of elements in sample space = $6 \times 6 = 36$
- 8. 1
- 9.
- 1 3 10. (H, T)
- 11. (a) (1,2,3,5) (b) (3,5) (c) (2) (d) [1, 4, 6]. 12. (a) A = (1, 2, 3, 4, 5, 6)(b) B = (3,6)(c) C = (4,5,6)(d) D = (3,5)(e) (4,6) 13. (b) $(B_1G_1, B_1G_2, B_1G_3, B_2G_1, B_2G_2, B_2G_3)$
- (a) (G_1G_2, G_1G_3, G_2G_3) (c) $(B_1B_2, B_1G_1, B_1G_2, B_1G_3, B_2G_1, B_2G_2, B_2G_3)$ A and B, A and C are mutually exclusive. (a) $\frac{1}{12}$ $(c)\frac{1}{18}$ 14. $(b)\frac{1}{a}$
- $(d)\frac{1}{6}$ (h) $\frac{5}{36}$ $(g)\frac{7}{36}$ $(e)\frac{1}{12}$ $(f) \frac{1}{9}$ (i) $\frac{1}{4}$ $(j)\frac{5}{18}$ (b) $\frac{7}{20}$ (a) $\frac{9}{20}$ $(c)\frac{13}{20}$ 15. $(d)\frac{11}{20}$ $(e)\frac{11}{20}$ $\left[-\frac{1}{3},\frac{1}{2}\right]$ 16.
- $\frac{1}{12}$ 17.
- 2 5 18.
- 11 19.
- 16
- 20. 91



Q.1 If E and F are two events associated with the same sample space in a random experiment, the probability of E given F, denoted as P(E|F), is formulated as _____.

(a) $\frac{P(E \cap F)}{P(F)}$, provided $P(F) \neq 0$	(b) $\frac{P(E \cap F)}{P(F)}$, provided P(F) = 0
(c) $\frac{P(E \cap F)}{P(F)}$	(d) $\frac{P(E \cap F)}{P(E)}$

- Q.2In the context of events E and F within a sample space S of an experiment, ifP(S|F) = P(F|F), then the value of P(S|F) is _____.(a) 0(b) -1(c) 1(d) 2
- **Q.3** Given events E and F with probabilities P(E) = 0.6, P(F) = 0.3, and $P(E \cap F) = 0.2$, what is the value of P(E|F)?

(a)
$$\frac{2}{3}$$
 (b) $\frac{1}{3}$ (c) $\frac{3}{4}$ (d) $\frac{1}{4}$

- Q.4 If P(E) = 0.5, P(F) = 0.4, and P(E \cap F) = 0.3, what is the value of P(F|E)? (a) $\frac{2}{5}$ (b) $\frac{3}{5}$ (c) $\frac{3}{4}$ (d) $\frac{2}{4}$

Q.6 If the probabilities are given by $P(A) = \frac{7}{11}$, $P(B) = \frac{6}{11}$, and $P(A \cup B) = \frac{8}{11}$, what is the value of P(A|B)? (a) $\frac{3}{5}$ (b) $\frac{2}{2}$ (c) $\frac{1}{2}$ (d) 1

- **Q.7** Given $P(A) = \frac{1}{5}$ and P(B) = 0, then find P(A|B). (a) 0 (b) 1 (c) Not defined (d) $\frac{1}{5}$
- Q.8 Given $P(A) = \frac{5}{13}$, $P(B) = \frac{7}{13}$, and $P(A \cap B) = \frac{3}{13}$, calculate P(A|B). (a) $\frac{1}{7}$ (b) $\frac{3}{7}$ (c) $\frac{3}{5}$ (d) $\frac{2}{7}$
- **Q.9** Which of the following represents the multiplication theorem of probability? (a) $P(A \cap B) = P(B) P(B/A)$ (b) $P(A \cap B) = P(A) P(B/A)$ (c) $P(A \cap B) = P(A) P(B/B)$ (d) $P(A \cap B) = P(A) P(A/A)$

Q.10 A box holds 5 brown and 7 black pebbles. What is the probability of drawing a brown pebble if the first pebble drawn is black? The drawn pebbles are not placed back into the box.

(a)
$$\frac{5}{11}$$
 (b) $\frac{8}{11}$ (c) $\frac{4}{18}$ (d) $\frac{14}{11}$

- **Q.11** Which of these expressions represents the multiplication theorem of probability? (a) $P(A \cap B) = P(B) P(B/A)$ (b) $P(A \cap B) = P(A) P(B/B)$ (c) $P(A \cap B) = P(A) P(A/A)$ (d) $P(A \cap B) = P(B) P(A/B)$
- **Q.12** A bag holds 6 pink and 8 white pebbles. What is the probability of drawing a brown pebble if the first pebble drawn is pink? The drawn pebbles are not placed back into the bag.

(a) 0 (b)
$$\frac{8}{11}$$
 (c) 1 (d) $\frac{14}{11}$

Q.13 A bag holds 9 identical balls, of which 4 are blue and 6 are green. Three balls are drawn randomly from the bag consecutively. Determine the probability that all three balls are blue.

(a)
$$\frac{5}{8}$$
 (b) $\frac{6}{19}$ (c) $\frac{5}{21}$ (d) $\frac{4}{7}$

- **Q.14** A box holds 3 red and 4 blue marbles. Two marbles are drawn without replacement. Determine the probability that the second marble is red given that the first marble is red.
 - (a) $\frac{3}{7}$ (b) $\frac{4}{7}$ (c) $\frac{1}{3}$ (d) $\frac{1}{7}$
- **Q.15** In a bag with 4 red and 7 blue balls, what is the probability of drawing a blue ball if the first ball drawn is red, and the drawn ball is then replaced in the bag?

(a)
$$\frac{8}{11}$$
 (b) $\frac{7}{11}$ (C) $\frac{4}{11}$ (d) $\frac{7}{4}$

- **Q.16** In a bag containing 4 red and 7 blue balls, what is the probability of drawing a blue ball if the first ball drawn is red, and the drawn ball is not replaced in the bag?
 - (a) $\frac{7}{10}$ (b) $\frac{8}{10}$ (c) $\frac{7}{1}$ (d) $\frac{4}{11}$
- **Q.17** In a bag with 4 red and 7 blue balls, what is the probability of drawing a red ball if the first ball drawn is blue, and the drawn ball is not replaced in the bag?

(a)
$$\frac{7}{11}$$
 (b) $\frac{7}{10}$ (c) $\frac{4}{10}$ (d) $\frac{9}{11}$

Q.18 If a bag contains 4 red and 7 blue balls, what is the probability of drawing a red ball if the first ball drawn is blue, and the drawn ball is replaced in the bag?

(a)
$$\frac{4}{11}$$
 (b) $\frac{8}{11}$ (C) $\frac{4}{18}$ (d) $\frac{14}{11}$

- **Q.19** In a bag containing 3 red, 2 white, and 4 green balls, what is the probability of drawing a white ball as the second draw, given that the first ball drawn is white, and the balls are not replaced in the bag?
 - (a) $\frac{1}{9}$ (b) $\frac{2}{9}$ (c) $\frac{7}{8}$ (d) $\frac{1}{8}$

- **0.20** In a bag containing 3 red, 2 white, and 4 green balls, what is the probability of drawing a white ball as the second draw, given that the first ball drawn is white, and the balls are replaced in the bag? $(a)\frac{1}{q}$ (b) $\frac{2}{2}$ $(c)\frac{1}{c}$ $(d)\frac{2}{2}$ Q.21 If the first ball drawn from a bag containing 3 red, 2 white, and 4 green balls is red, and the balls are replaced in the bag, what is the probability of drawing a green ball as the second draw? $(a)\frac{3}{a}$ (b) $\frac{4}{0}$ (c) $\frac{4}{2}$ $(d)\frac{4}{17}$ **Q.22** If the first ball drawn from a bag containing 3 red, 2 white, and 4 green balls is red, and the balls are not replaced in the bag, what is the probability of drawing a green ball as the second draw? (a) 0.82 (b) 0.91 (c) 1.23 (d) 0.5 Q.23 In a bag containing 3 red, 2 white, and 4 green balls, if the first ball drawn is red and the balls are not replaced in the bag, what is the probability of drawing a yellow ball as the second draw? $(a)\frac{1}{3}$ $(b)\frac{1}{2}$ (c) 1 (d) 0 **Q.24** Events P and Q are independent if $P(A \cap B) = P(A) P(B)$. Is it true of false. (a) False (b) True Q.25 What characterizes independent events? (a) If the outcome of one event does not affect the outcome of another (b) If the outcome of one event affects the outcome of another (c) Any one of the outcomes of one event does not affect the outcome of another (d) Any one of the outcomes of one event does affect the outcome of another Q.26 If a die is rolled twice, what is the probability of obtaining two 3's? $(a)\frac{1}{66}$ $(b)\frac{1}{16}$ $(c)\frac{1}{c}$ $(d)\frac{1}{26}$ **Q.27** What is the formula for events that are independent? (a) P(AB) = P(A) P(B)(b) $P(A \cap B) = P(A) P(B)$ (c) P(A+B) = P(A) P(B)(d) P(A-B) = P(A) P(B)**Q.28** What is the probability of getting four heads in a row when flipping a coin? $(b)\frac{6}{10}$ $(a)\frac{5}{8}$ $(c)\frac{1}{16}$ $(d)\frac{4}{7}$ Q.29 A bag contains gloves in colors blue, red, yellow, and pink. You randomly select a pair of gloves, replace it, and then choose another pair. What is the probability of selecting the pink pair of gloves on both occasions? (a) $\frac{3}{7}$ (c) $\frac{1}{16}$ $(d)\frac{1}{7}$ $(b)\frac{4}{7}$ Q.30 A box contains socks in colors blue, red, yellow, green, and pink. You randomly select a pair of socks, replace them, and then choose another pair. What is the probability of selecting the yellow pair of socks on both occasions?
 - (a) $\frac{8}{11}$ (b) $\frac{1}{25}$ (c) $\frac{4}{11}$ (d) $\frac{7}{4}$
- **Q.31** What is the likelihood of the coin landing on tails and the die showing a 2 when both are tossed?

(a)
$$\frac{1}{12}$$
 (b) $\frac{8}{10}$ (c) $\frac{7}{1}$ (d) $\frac{4}{11}$

Q.32 What is the probability of selecting a four and then a queen when a card is randomly chosen from a deck, replaced, and then another card is chosen?

(a)
$$\frac{7}{11}$$
 (b) $\frac{7}{100}$ (c) $\frac{1}{169}$ (d) $\frac{9}{11}$

Q.33 What is the probability of drawing a red ball when the first ball drawn is blue, and the balls drawn are replaced in the bag from a collection of 4 red, 2 green, and 7 blue balls?

(a)
$$\frac{28}{169}$$
 (b) $\frac{8}{11}$ (c) $\frac{4}{128}$ (d) $\frac{14}{11}$

Q.34 What is the probability of drawing the second ball to be white when the first ball drawn is green, and the balls are replaced in the bag from a collection of 3 red, 2 white, and 4 green balls?

(a)
$$\frac{1}{9}$$
 (b) $\frac{2}{9}$ (c) $\frac{8}{81}$ (d) $\frac{2}{81}$

Q.35 What is the probability of drawing a green ball as the second one, given that the first ball drawn is red and the balls are replaced in the bag, from a collection of 3 red, 2 white, and 4 green balls?

(a)
$$\frac{3}{9}$$
 (b) $\frac{4}{27}$ (c) $\frac{4}{3}$ (d) $\frac{4}{17}$

Q.36 The process in which previously calculated probabilities are updated with new probability values is referred to as _____.

(a) Revision theorem	(b) Bayes theorem
(c) Dependent theorem	(d) Updating theorem

Q.37 Formula for Bayes theorem is _____

(a)
$$P(A | B) = \frac{P(B | A)P(A)}{P(B)}$$
 (b) $P(A | B) = \frac{P(A)}{P(B)}$
(c) $P(A | B) = \frac{P(B | A)}{P(B)}$ (d) $P(A | B) = \frac{1}{P(B)}$

Q.38 What is the Formula of conditional probability P(A|B).

(a) $P(A B) = \frac{P(A \cap B)}{P(A \cap B)}$	(b) $P(A \mid B) = \frac{P(A \cap B)}{P(A \cap B)}$
$(a) \Gamma(\mathbf{R} \mid \mathbf{b}) = \frac{\mathbf{P}(\mathbf{B})}{\mathbf{P}(\mathbf{B})}$	$(b) \Gamma(A b) = \frac{P(A)}{P(A)}$
(c) $P(A B) = \frac{P(A)}{P(B)}$	(d) $P(A B) = \frac{P(B)}{P(A)}$

- Q.39 The prior probabilities in Bayes Theorem that are updated with new available information are referred to as ______.
 (a) independent probabilities
 (b) dependent probabilities
 (c) interior probabilities
 (d) posterior probabilities
- **Q.40** A man, who is known to tell the truth 3 out of 4 times, throws a die and claims it is a six. Calculate the probability that it is indeed a six. (a) $\frac{1}{8}$ (b) $\frac{5}{8}$ (c) $\frac{2}{7}$ (d) $\frac{3}{8}$
- **Q.41** Bag 1 holds 3 red and 5 black balls, and Bag 2 holds 4 red and 6 black balls. A ball is randomly
- drawn from one of the bags, and it turns out to be red. Determine the probability that it was drawn from Bag 2.
 - (a) $\frac{31}{62}$ (b) $\frac{16}{62}$ (c) $\frac{16}{31}$ (d) $\frac{31}{32}$

- **Q.42** In Bag 1, there are 4 white and 6 black balls, while Bag 2 contains 4 white and 3 black balls. A ball is randomly drawn from one of the bags, and it turns out to be black. Determine the probability that it was drawn from Bag 1.
 - (a) $\frac{12}{13}$ (b) $\frac{5}{12}$ (c) $\frac{7}{11}$ (d) $\frac{7}{12}$
- **Q.43** In a month, with a maximum of 31 days, let X represent the number of days. Is X a discrete random variable?
 - (a) True (b) False
- **Q.44** Identify which of the following is a continuous random variable.
 - (a) Number of kids in a family
 - (b) Number of planets around the sun
 - (c) Number of tails tossing a coin four times

(d) Life of an electric fan

Q.45 Determine the probability value of P(X=3) for the discrete random variable X, which takes on values x₁, x₂, x₃, with given probabilities P(X=0)=0, P(X=1) = $\frac{1}{4}$, and P(X=2) = $\frac{1}{4}$.

(a) 1 (b)
$$\frac{1}{2}$$
 (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

Q.46 Consider the random variable X, where the probability mass function P(X=x) is provided. Determine the value of K?

	x	0	1	2	3	
	P(X=x)	0	k	2k	3k	
(a) $\frac{1}{5}$	(t	(b)) $\frac{2}{5}$	((c) $\frac{1}{6}$		$(d)\frac{1}{2}$

Q.47 Consider the random variable X, where the probability mass function P(X=x) is provided. Determine the value of k.

	Х	0	1	2	3	
	P(X=x)	0	1	2k	3k	
			2			l j
$(a)\frac{1}{8}$	(b) $\frac{1}{4}$			$(c)\frac{1}{6}$		$(d)\frac{1}{2}$

Q.48 Find the value of c that allows the following function to function as a probability distribution for the discrete random variable x: f(x)=c(x+4), for x=0,1,2,3

(a)
$$\frac{1}{20}$$
 (b) $\frac{1}{16}$ (c) $\frac{1}{18}$ (d) $\frac{1}{22}$

- **Q.49** When rolling a die, what is the probability of obtaining an odd number? (a) $\frac{1}{8}$ (b) $\frac{1}{6}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$
- **Q.50** Consider the random variable X, where the probability mass function P(X=x) is provided. Determine the value of $P(X \ge 1)$.

	Х	0	1	2	3	
	P(X=x)	1	1	1	1	
		8	2	8	4	
(a) $\frac{5}{7}$	$(b)\frac{7}{8}$		(c) $\frac{3}{8}$		(d) $\frac{8}{9}$

Q.51	Consider the random variable X, where the probability mass function $P(X=x)$ is specified. Find							
	the value of F((1)			2			
		\hat{X}	0	1	2 1	3	4	
		$\Gamma(\Lambda - X)$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{16}$	$\frac{1}{4}$	$\frac{1}{16}$	
	$(a)^{\frac{1}{2}}$	í (b	$)\frac{8}{3}$		$(c)^{\frac{2}{2}}$	2	10	$(d)^{\frac{5}{-}}$
	\$ 5		² 5		\$ 5	5		< ⁸
Q.52	Let X represer	nt the random	variable	, and the	probabilit	y mass fu	nction is c	lenoted as P(X=x).
•	Determine the	e value of the o	cumulativ	ve distrib	ution fund	ction, F(4)).	
		Х	0	1	2	3	4]
		P(X=x)	1	3	2	4	1	
	9		11	11	11	11	11	1
	(a) $\frac{1}{11}$	(b)1		(c) $\frac{1}{1}$	1		(d) $\frac{1}{2}$
0 50	1471 11-	1. 1					1 2	
Q.53	When rolling a $()^1$	a die, what is t	he likelil	1000 of 0	btaining a	n even nu	imber?	(I) ¹
	(a) $\frac{-}{8}$	(b	$)\frac{-}{6}$		(c) $\frac{1}{2}$	2		(d) $\frac{-}{4}$
0.54				1.:1:	- 1- 4 - 2 - 2		6 2 2	
Q.54	when rolling a $()^{1}$	a die, what is t	ne proba	idility of (obtaining	a multiple	e of 3?	()) ¹
	$(a) - \frac{1}{8}$	(D	$\frac{1}{6}$		$(c) - \frac{1}{2}$	2		$(a) -\frac{1}{3}$
0 55	When rolling	a dia whatiat	honroho	bility of	ohtoining	numbora	that are m	ultiplag of 22
Q.55	$(a)^{1}$	a ule, wildt is t	1	ionity of 0		Intilibers	tilat al e li	(d) ¹
	$(a) \frac{-}{8}$	(D	$\frac{1}{6}$		$(c) \frac{1}{2}$	2		$(u) - \frac{1}{3}$
0.56	What is the pr	obability of se	electing a	n ace fro	m a deck o	of cards?		
1	$(a)^{\frac{1}{2}}$	(h	$\frac{1}{2}$		$(c)^{\frac{1}{2}}$	<u>.</u>		$(d)^{\frac{1}{2}}$
	(1) 8	(-	6		() 2	2		13
Q.57	What is the pr	obability of se	electing a	club car	d from a d	eck of car	·ds?	
•	$(a)^{\frac{1}{2}}$	j (b	$)^{\frac{1}{2}}$		$(c)^{\frac{1}{2}}$	<u>_</u>		$(d)^{\frac{1}{-}}$
	\$ 8		⁴		2	1		13
Q.58	Two T-shirts a	are successive	ly drawn	at rando	m withou	t replacei	nent from	a drawer containing 5
	red T-shirts ar	nd 8 white T-s	hirts. Ca	lculate th	e probabi	lities for a	all possible	e outcomes.
	(a) 1	(b) 13		(c) 4	10		(d) 346
0 50	A ion of mightle	a ia nan damlu	alastad	ucing on	automata	d filling n		ana aa h ian ia fillad
Q.59	with 2.5 kg of	s is railuoilliy nickles. Howe	ver due	usilig all to some i	ssues in t	he autom	ated proce	ere each jar is inteu
	may vary with	in the range o	of 1.7 kg t	to 2.9 kg.	excluding	the latter	. Let X rer	present the weight of
	the selected ja	r of pickles. D	etermine	e the rang	ge of X.			
	(a) $3.7 \le X < 3.9$ (b) $1.6 \le X < 3.2$							
	(c) $1.7 \le X < 2$	2.9		(d)	$1 \le X < 5$	5		
0.00	The new sector s	ation for the		hr da!!	- from -+	of the		and an wani-lile V :-
U0.9	denoted as	ation for the p	nobadili	ty density	y function	of the col	nunuous r	anuoni variadle a is
	(a) $\int f(x)dx =$	 ∞1<=x<=	1					
	(b) $\int f(x) dx =$	1, -∞<=x<=	∞					
	(c) $\int f(x)dx =$	0, -∞<=x<=	∞					
	$(c) \int f(x) dx = 0, \infty < -x < -\infty$							

- (d) $\int f(x+2)dx = .5, -\infty <=x <=\infty$
- **Q.61** Let X represent the number of heads in three coin tosses. Calculate the mean and variance for the random variable X.
 - (a) 4.8 (b) 6 (c) 3.2 (d) 1.5

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Q.62	A football play Calculate the o	yer successfully ma expected value for a	kes 75% of his 5-p a 7-point shot by th	oint shots a 1e player.	and 25% of his	s 7-point shots.	
	(a) 4.59	(b) 12.35	(c) 5.25	(d)	42.8		
Q.63	63 In a card game, Reena earns 3 Rs. for drawing either a king or a spade, and 7 Rs. for drawing either a heart or a queen from a standard deck of 52 playing cards. To make the game fair, we should be the amount she pays each time to lose the game?						
	(a) 15	(b)6		(c) 23		(d) 2	
Q.64	A random var $P(4) = 0.32$ at	iable X has only two nd $P(5) = 0.47$, res	o possible values, 4 pectively. Calculate	and 5, with the varian	h probabilitie ce of X.	S	
	(a) 8.21	(b) 12	(c) 3.7		(d) 4.8		
Q.65	A 6-sided die six are three t the expected y	exhibits bias, where imes as likely to ap value of X given tha	e the numbers one pear. If X represent t six is shown on th	to four have ts the numb ne uppermo	e equal proba per on the upp pst face.	bilities, while five and ermost face, calculate	
	(a) $\frac{13}{4}$	(b) $\frac{3}{5}$	((c) $\frac{2}{7}$		$(d)\frac{21}{87}$	
Q.66	Throwing a fa the expected v consecutive th	ur cubical die twice value of the event ir nrows.	e and summing up wolving the sum of	the scores the scores	is considered on the upper	l an event. Determine sides of the die in two	
	(a) 48	(b) 76	((c) 7		(d) 132	
Q.67	A random variable X can assume only two values, 2 and 4, with probabilities $P(2) = 0.45$ and $P(4) = 0.97$, respectively. Calculate the expected value of X. (a) 3.8 (b) 2.9 (c) 4.78 (d) 5.32						
0.68	What is the al	ternative term for I	Bernoulli trials?				
U	(a) Two-way (c) Nucleon ex	experiment xperiment	(b) Dicho (d) Three	otomous expe	periment riment		
Q.69	After which Swiss mathematician is the term "Bernoulli trials" named?						
	(a) Jacob Berr (c) Johann Gu	ıoulli tenberg	(b) Alber (d) Archi	t Einstein medes			
Q.70	Bernoulli trials specifically involve outcomes that are mutually exclusive. (a) True (b) False						
Q.71	How many po	ssible outcomes ca	n occur in a Bernou	ılli trial?			
	(a) 3	(b) 2	((c) 5		(d) 2 ⁿ	
Q.72	 Bernoulli trials are also known as or questions. (a) positive, negative (b) natural, whole (c) yes, no (d) mutually exclusive, mutually inclusive 						
Q.73	To which cate (a) Continuou (b) Sine proba (c) Discrete p (d) Mutual pr	gory of probability Is probability distri ability distribution robability distributi obability distributi	distribution does t bution ion on	he Poisson	distribution	belong?	

Q.74	The Poisson distribution depicts the expected count of occurrences of an event within a specific time interval				
	(a) False	(b) True			
Q.75	What is the probability formula for the Po	bisson distribution?			
	(a) $P(x; \mu) = (e^{\cdot \mu}) (\mu^x) / x!$	(b) $P(x; \mu) = (e^{-x}) (\mu^x) / x!$			
	(c) $P(x; \mu) = (e^{-\mu}) (\mu) / x!$	(d) $P(x; \mu) = (e^{-\mu}) (\mu^x) / x$			
Q.76	What is the expression for the binomial d	istribution formula?			
	(a) $P[X = x] = {}^{n}C_{n} p^{x} q^{n-x}$	(b) $P[X = x] = {}^{x}C_{x} p^{x} q^{n-x}$			
	(c) $P[X = x] = {}^{n}C_{x} p^{x} q^{n-x}$	(d) P [X = x] = ⁿ C _x p ⁿ q ^{n-x}			
Q.77	In a binomial distribution, (n-x) represen	ts the number of successes.			
	(a) False	(b) True			
Q.78	$P(x; \mu) = (e^{-\mu}) (\mu^{x}) / x!$ is the formula for				
	(a) parametric distribution	(b) continuous distribution			
	(c) poisson distribution	(d) extreme distribution			
Q.79	The formula P $[X = x] = {}^{n}C_{x} p^{x} q^{n-x}$ represe	ent as			
	(a) parametric distribution	(b) binomial distribution			
	(c) poisson distribution	(d) extreme distribution			
Q.80	Three number are chosen from 1 to 30. T	he probability that they are not consecutive, is			
	$(A)\frac{142}{145}$	$(B)\frac{144}{145}$			
	(145) (143) (143)	(D) $\frac{1}{2}$			
	$(C) \frac{1}{145}$	$(D)\frac{1}{145}$			
Q.81	The probability that out of 10 person, all $\frac{30}{5}$	born in June, at least two have the same birthday is			
	$(A) \frac{\partial C_{10}}{(30)^{10}}$	(B) $\frac{C_{10}}{30!}$			
	(C) $30^{10} - {}^{30}P_{10}$	(D) $30^{10} + {}^{30}C_{10}$			
	$(0) - \frac{(30)^{10}}{(30)^{10}}$	$(D) - (30)^{10}$			
Q.82	The probability that when 12 balls are dis	stributed among three boxes, the first will contain three balls is			
	(A) $\frac{2^{3}}{3^{12}}$	$(B) \frac{13C_3 \times 2^2}{3^{12}}$			
	(f) $\frac{{}^{12}C_{3} \times 2^{12}}{2}$	(D) $\frac{{}^{12}C_3}{}$			
	³¹²	(D) _{12³}			
Q.83	A committee of five is to be chosen from a	a group of 9 people. The probability that a certain married			
	couple will either serve together or not at	t all, is			
	$(A)\frac{1}{2}$	$(B)\frac{5}{6}$			
	$(1)^{\frac{1}{4}}$	$(D)^{\frac{2}{2}}$			
Q.84	7 white balls and 3 black balls are placed	in a row at random. The probability that no two black			
	balls are adjacent is	7			
	(A) $\frac{1}{2}$	(B) $\frac{7}{15}$			
	(C) $\frac{2}{15}$	(D) $\frac{1}{3}$			
Q.85	Among 15 players comma 8 are batsmen	and 7 are bowlers. Find the probability that a. team is			
	chosen of 6 batsmen and 5 bowlers				
	(A) $\frac{{}^{8}C_{6} \times {}^{7}C_{6}}{{}^{15}C}$	(B) $\frac{{}^{8}C_{6} + {}^{7}C_{5}}{{}^{15}c}$			

(A)
$$\frac{\frac{6C_6 \times 7C_6}{15C_{11}}}{(C) \frac{15}{28}}$$
 (B) $\frac{\frac{6C_6 \times 7C_6}{15C_{11}}}{(D) \frac{14}{29}}$

Q.86	A pack of cards contain 4 aces comma 4 kings comma 4 queens and 4 jacks. Two cards are drawn at random period The probability that at least one of these is an ace, is					
	$(A)\frac{9}{20}$	$(B)\frac{3}{16}$				
	$(C) \frac{1}{2}$	$(D)^{\frac{1}{2}}$				
	\$ 6	() g				
Q.87	If A and B are two independent events, th	ten A and \overline{B} are				
	(A) Not independent	(B) Also independent				
	(C) Mutually exclusive	(D) Can't be determined				
Q.88	A and B are two independent events such	that $P(A) = \frac{1}{2}$ and $P(B) = \frac{1}{3}$. Then P (neither A nor B)				
	is equal to	1				
	$(A)\frac{2}{3}$	(B) $\frac{1}{6}$				
	$(C)\frac{5}{6}$	(D) $\frac{1}{3}$				
0.00	The odds against a cortain quantic Γ , 2 c	and the odds in foreign of another event is 6 . E. If both				
Q.89	the events are independent, then the pro-	had the oldes in layour of another event is 6 : 5. If both				
	(A) $\frac{50}{2}$	(B) $\frac{52}{2}$				
	$(2)^{25}$	$(7)_{77}^{63}$				
	$(C) \frac{88}{88}$	$(D)\frac{88}{88}$				
Q.90	A draws two cards one by one with replacement from a pack of 52 cards and B throws a pair of dice what is the chance that A gets both cards of same suit and B gets total of 6?					
	$(A)\frac{1}{144}$	(B) $\frac{1}{4}$				
	$(C) \frac{5}{5}$	$(D) \frac{7}{7}$				
	144	144				
Q.91	Two dice are thrown together. The proba	bility that at least one will show its digit 6 is				
	$(A)\frac{11}{36}$	(B) $\frac{1}{3}$				
	$(C)\frac{5}{11}$	(D) $\frac{1}{6}$				
		,				
Q.92	The probability that A speaks truth is $\frac{4}{5}$, w	while this probability for B is $\frac{3}{4}$. The probability that they				
	contradict each other when asked to spea $\frac{4}{3}$	ak on a fact				
	$(A) = \frac{1}{5}$	$(B) = \frac{1}{2}$				
	(C) $\frac{7}{20}$	(D) $\frac{3}{20}$				
Q.93	The probability that at least one of the ev	rents A and B occur is 0.6. If A and B occur				
	simultaneously with probability 0.2, then and B respectively, is equal to	P(A) + P(B) where A and B bar are complements of A				
	(A) 0.4	(B) 0.8				
	(C) 1.2	(D) 1.4				
Q.94	A natural number x is chosen at random $x + \frac{100}{50} > 50$ is	from the first 100 natural numbers. The probability that				
	x x x x x x x x x x x x x x x x x x x	$(\mathbf{p})^{11}$				
	$(A) \frac{1}{10}$	(D) $\frac{11}{50}$				
	(C) $\frac{1}{20}$	(D) $\frac{11}{20}$				

Q.95 One mapping is selected at random from all the mappings of the set A = {1,2,3, ..., n} into itself. The probability that the mapping selected is one to one mapping is given by

(A) $\frac{1}{n^n}$	(B) $\frac{1}{n!}$
(C) $\frac{(n-1)!}{n^{n-1}}$	(D) Zero

Q.96 6 girls and 5 boys sit together randomly in a row, the probability that no two boys sit together, is

$(A) \frac{6!5!}{11!}$	$(B)\frac{6!6!}{11!}$
$(C) \frac{6!7!}{2!11!}$	(D) $\frac{5!7!}{2!11!}$

Q.97 10 bulbs out of a sample of 100 bulbs manufactured by a company are defective. The probability that 3 out of 4 bulbs, bought by a customer will not be defective, is

(A) $\frac{{}^{4}C_{3}}{{}^{100}C_{4}}$	(B) $\frac{{}^{90}C_3}{{}^{96}C_4}$
$(C) \frac{{}^{90}C_3}{{}^{100}C_4}$	(D) $\frac{{}^{90}C_3 \times {}^{10}C_1}{{}^{100}C_4}$

Q.98 The probability that a teacher will give an unannounced test during any class meeting is one fifth. If a student is absent twice, the probability that he will miss at least one test, is

(A) $\frac{7}{25}$	(B) $\frac{9}{25}$
(C) $\frac{16}{25}$	(D) $\frac{24}{25}$

Q.99 Three letters are written to three different persons and addresses on the three envelopes are also written. Without looking at the addresses, the letters are kept in these envelopes. The probability that all the letters are not placed into their right envelopes is

(A) $\frac{1}{2}$	(B) $\frac{1}{3}$
$(C)\frac{1}{6}$	(D) $\frac{5}{6}$

Q.100 n letters are written to n different persons and addresses on the n envelopes are also written. If the letters are placed in the envelopes at random, the probability that at least one letter is not placed in the right envelope, is

(A) $1 - \frac{1}{n}$	(B) $1 - \frac{1}{2n}$
(C) $1 - \frac{1}{n^2}$	(D) $1 - \frac{1}{n!}$



- **Q.1** If A and B are two independent events such that $P(\overline{A} \cap B) = \frac{2}{15}$ and $P(A \cap \overline{B}) = \frac{1}{6}$, then find P(B).
- **Q.2** If $P(B) = \frac{3}{4}$, $P(A \cap B \cap \overline{C}) = \frac{1}{3}$ and $P(\overline{A} \cap B \cap \overline{C}) = \frac{1}{3}$. Find $P(B \cap C)$.
- **Q.3** Five horses are in race, Mr. A selects two of the horses at random and bets on them. Find the probability that Mr. A selected the winning horse.
- **Q.4** A coin is tossed successively three times. Find the probability of getting exactly one head or two heads.
- **Q.5** From a pack of 52 playing cards, three cards are drawn at random. Find the probability of drawing a king, a queen and a jack.
- **Q.6** Five ordinary dice are rolled at random and the sum of the numbers shown on them is 15. Find the probability that the numbers shown on each is any one from 2, 3, 4 or 5.
- **Q.7** A bag contains 36 tickets, numbered from 0 to 35. Three of the tickets are drawn at random. Find the probability that the sum of the numbers on 3 tickets is 36.
- **Q.8** A die is rolled. If the outcome is an odd number, what is the probability that it is prime?
- **Q.9** Three fair coins are tossed. Find the probability that the outcomes are all tails, if atleast one of the coins shows a fail.
- **Q.10** Three cards are drawn successively, without replacement from a pack of 52 well shuffled cards. What is the probability that first two cards are queens and the third card is a jack?
- **Q.11** A man is known to speak the truth 4 out of 5 times. He throws a die and reports that it is a four. Find the probability that it is actually a four.
- **Q.12** A pair of dice is rolled twice. Find the probability distribution of number of doublets.
- Q.13 A coin is tossed thrice. X denotes the number of heads appeared. Find the mean and variance of X.
- **Q.14** Two dice are thrown. Find the probability of getting an odd number on the first and a multiple of 3 on the other.
- **Q.15** If P(A) = 0.4, P(B) = 0.8, P(B|A) = 0.6. Find P(A | B) and $P(A \cup B)$.
- Q.16 If A and B are mutually exclusive events, find P(AIB).

- **Q.17** The ratio of the number of boys to the number of girls in a class is 1: 2. It is known that the probability of a girl and a boy getting a first division are 0.25 and 0.28 respectively. Find the probability that a student chosen at random will get first division.
- **Q.18** A fair die is tossed twice. If the number appearing on the top is less than 3, it is a success. Find the probability distribution of successes.
- **Q.19** A machine operates if all of its three component function. The probability that the first component fails during the year is 0.14, the probability that the second component fails is 0.1 and the probability that the third component fail is 0.05. What is the probability that the machine will fail during the year?
- **Q.20** A and B toss a coin alternatively till one of them gets a head and wins the game. If A starts first, find the probability that 8 will win the game.
- **Q.21** A bag contains 3 white and 6 black balls, while another bag contains 6 white and 3 black balls. A bag is selected at random and a ball is drawn. Find the probability that the ball is of white colour.
- **Q.22** The probability that student entering a university will graduate is 0.4. Find the probability that out 3 students of the university:
 - (i) None will graduate
 - (ii) Only one will graduate
 - (iii) All will graduate.
- **Q.23** Bag A contains 6 red and 5 blue balls and another bag B contains 5 red and 8 blue balls. A ball is drawn from the bag A without seeing its colour and it is put into the bag B. Then a ball is drawn from bag B at random. Find the probability that the ball drawn is blue in colour.

Γ

Q.	1	2	3	4	5	6	7	8	9	10
Ans.	А	С	A	В	С	D	C	В	В	A
Q.	11	12	13	14	15	16	17	18	19	20
Ans.	D	А	С	С	В	А	С	A	D	С
Q.	21	22	23	24	25	26	27	28	29	30
Ans.	В	D	D	В	А	D	В	С	С	В
Q.	31	32	33	34	35	36	37	38	39	40
Ans.	А	С	A	С	D	В	A	A	D	D
Q.	41	42	43	44	45	46	47	48	49	50
Ans.	С	D	A	D	В	С	A	D	С	В
Q.	51	52	53	54	55	56	57	58	59	60
Ans.	D	В	С	D	С	D	В	A	С	В
Q.	61	62	63	64	65	66	67	68	69	70
Ans.	D	С	D	С	А	С	С	В	A	A
Q.	71	72	73	74	75	76	77	78	79	80
Ans.	В	С	С	В	А	С	A	С	В	В
Q.	81	82	83	84	85	86	87	88	89	90
Ans.	С	В	С	В	А	А	В	D	В	С
Q.	91	92	93	94	95	96	97	98	99	100
Ans.	А	С	С	D	С	С	D	В	D	D

ANSWER KEY – LEVEL – I